

Remarks

Claims 1 through 27 were pending in the application and stand rejected. Claims 1-12, 14-16, 19, and 24 have been amended, claims 13, 26 and 27 have been canceled, and claim 28-31 have been added to advance the prosecution of this application, and reconsideration of the claims is respectfully requested. No new matter has been added by virtue of this amendment.

Rejections Under 35 U.S.C. § 112

35 U.S.C. § 112, ¶ 1

Claims 1 through 27 were rejected under 35 U.S.C. § 112, ¶ 1 as failing to comply with the written description requirements. Without acquiescence to the Examiner's ground of rejection, claims 1 and 14 have been amended to read "a specific gravity less than the specific gravity of molten metal," which is supported in the specification on page 4, lines 4 and 5. Thus, Applicants request that this rejection be withdrawn with respect to claims 1 and 14, as amended. Furthermore, Applicants respectfully request the Examiner to withdraw the rejection of dependent claims 2-12, which depend from claim 1, and claims 15-25 and 28-29, which depend from claim 14. New independent claim 30 also recites "a specific gravity of less than the specific gravity of molten metal," which is supported by the specification.

35 U.S.C. § 112, ¶ 2

Claims 1 through 27 were also rejected under 35 U.S.C. § 112, ¶ 2 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Without acquiescence to the Examiner's ground of rejection, claim 1 has been amended to read: "a means for orienting the refractory body in a narrow end downward position if the refractory body is misaligned". Claim 14 has been amended to read "a means for aligning the refractory body in the metal pouring vessel during

at least a portion of the metal pour without substantially obstructing the flow of molten metal through the discharge nozzle”. Claim 30 recites “a means for orienting the refractory body in a narrow end downward position without persisting the discharge nozzle”. Thus, claims 1, 14, and 30 invoke 35 U.S.C. § 112, ¶ 6. *See* MPEP § 2181. Hence, § 112, ¶ 2 is satisfied by the written description which sets forth the supporting structure for the means plus function limitation. *See* MPEP § 2181 and *In re Donaldson*, 16 F.3d 1189, 1195 (Fed. Cir. 1994) (“[O]ne must set forth in the specification an adequate disclosure showing what is meant by that language.”) One such structure is disclosed in the specification at page 5, lines 20-27, and page 9, lines 21-31. Hence, Applicants request this rejection to be withdrawn with respect to claims 1 and 14, as amended, as well as claims 2-12, which depend from claim 1, and 15-25 and 28-29, which depend from claim 14.

Rejections Under 35 U.S.C. § 103

Claims 1-7, 9, 13-16 and 24 - 27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Eastwood* (U.S. Patent No. 5,451,036) in view of *Labate et al.* (U.S. Patent No. 4,494,734) or *Labate* (U.S. Patent No. 4,709,903).

Claim 1, as amended, reads, “a means for orienting the refractory body in a narrow end downward position if the refractory body is misaligned”. Claim 14, as amended, reads, “a means for aligning the refractory body in the metal pouring vessel during at least a portion of the metal pour without substantially obstructing the flow of molten metal through the discharge nozzle.” New independent claim 30 recites “a means for orienting the refractory body in a narrow end downward position without persisting in the discharge nozzle”.

The language of claim 1, 14 and 30 invokes 35 U.S.C. § 112, ¶ 6. Therefore, the scope of prior art is dictated by MPEP § 2182. “[T]he application of a prior art reference to a means . . . plus-function limitation requires that the prior art element perform the identical function specified in the claim.” MPEP § 2182. *Cf. Telemac Cellular Corp. v. Topp Telecom, Inc.*, 58 USPQ2d 1545, 1555 (Fed. Cir. 2001) (“To find literal infringement of claim

limitations written in means-plus-function form, a court must find, at a minimum, identity of function”) (emphasis added); *Smiths Industries Medical Systems, Inc. v. Vital Signs, Inc.*, 51 USPQ2d 1415, 1421 (Fed. Cir. 1999) (“[T]o be an equivalent under section 112, ¶ 6, . . . it must . . . perform the identity of function as that recited in the claim language.”) (emphasis added). Therefore, a reference that fails to teach or suggest a means for orienting as recited in claim 1 cannot form a proper basis for rejection. Likewise, a reference which fails to teach or suggest a means for aligning the refractory body without substantially obstructing the discharge nozzle cannot form a proper basis for rejection of claim 14. Moreover, a reference that fails to teach or suggest a means for orienting the refractory body in a narrow end downward position without persisting in the discharge nozzle.

Eastwood teaches an improved dart. *Eastwood* clearly states that a dart persists during the entire pour so that it can be present to act as a float member to close off the tap hole:

Conventional darts consist basically of a head and an attached tail, the head being an enlarged body of refractory material and the tail being a relatively slender, elongate member, e.g. of 1 m length, with at least a portion of the tail extending below the head and being adapted to engage in the tap hole of the furnace, the head acting in effect as a float valve member and eventually closing off the tap hole as the level of the melt falls, to prevent slag exiting via the tap hole.

(col. 1, lines 9-18.)

Eastwood teaches a “tail extending below the head and being adapted to engage in the tap hole of the furnace.” (col. 1, lines 13-14.) *Eastwood* further describes a “float valve member,” wherein the head eventually “close[s] off the top.” (col. 1, lines 15-16.) If the head “close[s] off the top,” and the “tail extend[s] below the head,” (col. 1, line 13) the tail first proceeds through the tap hole, and persists there during the pour. Hence, the function of the tail disclosed by *Eastwood* obstructs the discharge nozzle.

With respect to claim 1, *Eastwood* and the other art of record fail to teach, suggest, or disclose “a means for orienting the refractory body in a narrow end downward position if the refractory body is misaligned”. Misalignment can refer to a situation where the refractory body is not in a narrow end downward position. Regarding *Eastwood*, an example of misalignment can be the tail not engaging the tap hole. In *Eastwood*, misalignment can occur if the refractory body and tail combination strikes the wall of the receptacle or otherwise does not engage in the tap hole of the furnace. For example, if the *Eastwood* device is introduced into the furnace prematurely, the tail may not engage the tap hole, resulting in misalignment. Disadvantageously, the body/tail combination of *Eastwood* may float on the surface of the molten metal due to misalignment. Since the *Eastwood* tail persists in the molten metal environment during the pour, the tail does not dissolve to allow the refractory body to orient in a narrow end downward position, which is the function recited in claim 1. For at least this reason, claim 1 and depending claims 2-12, are patentable in light of the *Eastwood* reference and other art of record. Therefore, Applicants requests allowance of these claims.

With respect to claim 14, *Eastwood* and the other art of record do not teach, disclose or suggest “a means for aligning the refractory body in the metal pouring vessel during at least a portion of the metal pour without substantially obstructing the flow of molten metal through the discharge nozzle”. *Eastwood* teaches a tail constructed of materials known to be resistant to dissolution in molten metal. (col. 1, line 59; col. 2, lines 25-26.) For at least this reason, claim 14 and depending claims 15-25 and 28-29, are patentable in light of the *Eastwood* reference and other art of record. Therefore, Applicants requests allowance of these claims.

With respect to claim 30, *Eastwood* and the other art of record do not teach, disclose or suggest “a means for orienting the refractory body in a narrow end downward position without persisting in the discharge nozzle”. The *Eastwood* tail persists in the molten metal environment, to engage the tap hole during the pour. For at least this reason, claim 30 and depending claim 31, are patentable in light of the *Eastwood* reference and other art of record. Therefore, Applicants requests allowance of these claims.

Furthermore, neither *Labate et al.* or *Labate* teach, disclose or suggest the means of the claimed invention. Both *Labate* patents teach a rod that persists in the tap hole as a guide the entire time it takes the body to get to the tap hole. *Labate et al.* provides “rod and refractory sleeves forming guide means engageable in said tap hole for guiding said modified conical closure to engagement in said tap hole, said rod extending below said tap hole when said modified conical closure is engaged therein[.]” (col. 4, ll. 38-42). *Labate* provides “rod and refractory sleeves forming guide means engageable in said tap hole for guiding said barrel-shaped closure to engagement in said tap hole[.]” (col. 6, ll. 33-37). Further, Figure 6 of *Labate* illustrates that the tail penetrates through the tap hole when the body engages in the tap hole.

Hence, the rejection under § 103(a) is believed to be obviated and claims 1, 14 and 30 are believed to be allowable. Furthermore, claims 2 - 7, 9, and 15, 16, 24, 25, and 28, which depend from allowable subject matter in claims 1 and 14, respectively, are also believed to be allowable.

Claims 1 through 27 were also rejected under 35 U.S.C. § 103(a) as being unpatentable over *Eastwood* in view of either *Labate et al.* or *Labate* because Examiner takes official notice that “screw threads, crimps and protrusions are old and well known” in the art. However, as previously discussed, neither *Eastwood* nor *Labate* or *Labate* teach, disclose, or suggest a means for orienting the refractory body in a narrow end downward position as recited in claims 1 or 30, or a means for aligning a refractory body without substantially obstructing the discharge nozzle, as recited in claim 14. Hence, Applicants request the Examiner to withdraw this rejection under § 103(a) and to allow claims 1, 14 and 30. Furthermore, claims 2-12 and 15-25, and 28 which depend from allowable subject matter in claims 1 and 14, respectively, are also believed to be allowable.


Conclusion

Applicants submit that the claims, as amended, are in condition for allowance. If the Examiner believe that a telephone conference will advance the prosecution of this application, the Examiner is highly encouraged to telephone Applicants' attorney at the number given below. For the foregoing reasons, Applicants believe that the Office Action of July 23, 2004 has been fully responded to. In view of the foregoing, Applicants respectfully submit that the present application is now in condition for allowance, and such action is respectfully requested.

The Petition fee of \$215.00, as well as any additional fees as a result of the filing of this paper, should be charged to our Deposit Account No. 02-3978 — a duplicate of this paper is enclosed for that purpose.

Respectfully submitted,

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